



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,549	03/23/2004	Seung-Woo Kim	5000-1-569	2548
33942	7590	12/13/2005	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			BOLDA, ERIC L	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/806,549

Applicant(s)

KIM ET AL.

Examiner

Eric Bolda

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-3, 6-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 4, 5 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The disclosure is generally narrative and indefinite, failing to conform with current U.S. practice. It appears to be a literal translation into English from a foreign document and is replete with grammatical and idiomatic errors.

Appropriate correction is required.

### ***Claim Objections***

2. Claims 4, 10 and 12 are objected to because of the following informalities: In claims 4 and 12 “coherent length” should be “coherence length”. In claim 10, the phrase “light generated by the semiconductor optical amplifier reaches the reflector via the optical waveguide is reflected..” is grammatically incorrect. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 5 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims recite that “the optical wavelength

Art Unit: 3663

is 10mm or more". However, the disclosure refers to the invention as a source for optical communications light, which has a much shorter wavelength (in fact, 10mm is not considered an "optical" wavelength by those skilled in the art.)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the limitation "broad-band reflector" in the last line of the claim, but only "a reflector" in the third line. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Tiemeijer et al. ("High-Gain 1310-nm Reflective Semiconductor Optical Amplifiers with Low-Gain Uncertainty").

With regard to claim 1, Tiemeijer discloses in Fig. 1 a semiconductor optical amplifier SOA, with an active layer serving as a gain area, and a reflector disposed for reflecting light output from the SOA so that the light is input back to the active layer. It is

Art Unit: 3663

inherent that the active layer of the SOA is formed between an under-cladding and an over cladding layer. It is also inherent that antireflection layers are formed at both ends of the active layer (it is well-known that if such layers were not present, the device would be a laser). The clause "so as to minimize a gain ripple of the semiconductor optical amplifier " is essentially a statement of intended or desired use. Also, the preamble "a broad-band light source" is one possible use of the device disclosed in Tiemeijer, when no input light is supplied. Thus, this claim does not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

With regard to claim 6, the mirror has a reflectivity greater than  $1 \times 10^{-5}$ .

With regard to claim 7, the device has a polarization controller (Faraday rotator).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3663

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemeijer as applied to claim 1 above and further in view of Nishimura (US Pat. No. 5,488,507).

Tiemeijer does not specifically disclose that the SOA comprises one of a traveling SOA or a reflective SOA. However, Nishimura teaches a traveling wave SOA. It would be obvious use the traveling wave SOA of Nishimura in the configuration of Tiemeijer for the purpose of reducing the drive current.

10. Claims 3, 8, 10, 13-15, rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemeijer and further in view of Abdelkader (US Pat. No. 5,555,127).

With regard to claim 8, Tiemeijer discloses in Fig. 1 a semiconductor optical amplifier SOA and a reflector disposed for reflecting light output from the SOA.

Tiemeijer does not disclose an optical waveguide configured to optically couple the SOA and reflector. However, Abdelkader teaches in Fig. 3 an hybrid optical amplifier with optical waveguides coupling an amplifying medium (35) to several optical components. It would have been obvious to one skilled in the art (e. g. an optical engineer) to couple

the reflector and SOA of Tiemeijer in the manner of Abdelkader for the purpose of optical stability.

With regard to claim 3, Tiemeijer discloses all the elements of the claim except an optical waveguide configured to optically couple the SOA and reflector. However, Abdelkader teaches in Fig. 3 an hybrid optical amplifier with optical waveguides coupling an amplifying medium (35) to several optical components. It would have been obvious to one skilled in the art (e. g. an optical engineer) to couple the reflector and SOA of Tiemeijer in the manner of Abdelkader for the purpose of optical stability.

With regard to claim 9, it is inherent that the active layer of the SOA is formed between an under-cladding and an over cladding layer. It is also inherent that antireflection layers are formed at both ends of the active layer (it is well-known that if such layers were not present, the device would be a laser).

With regard to claim 10, the light generated by the SOA reaches the reflector via the optical waveguide.

With regard to claim 13, the distance from the SOA to the reflector is 12.5mm (Fig. 1 of Tiemeijer).

With regard to claim 14, the mirror has a reflectivity greater than  $1 \times 10^{-5}$ .

With regard to claim 15, the device has a polarization controller (Faraday rotator).

11. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemeijer in view of Abdelkader (US Pat. No. 5,555,127) as applied to claim 8 above, and further in view of Nishimura. Tiemeijer in view of Abdelkader disclose all elements of the the claim but do not specifically disclose a traveling wave amplifier. However,

However, Nishimura teaches a traveling wave SOA. It would be obvious use the traveling wave SOA of Nishimura in the configuration of Tiemiejer for the purpose of reducing the drive current.

***Allowable Subject Matter***

12. Claims 4, 5 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or make obvious, a length of optical waveguide between the SOA and reflector which is at least double the amplified spontaneous emission coherence length.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Bolda whose telephone number is 571-272-8104. The examiner can normally be reached on M-F from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jack Keith, can be reached on 571-272-6878. Please note the fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.



Art Unit: 3663

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EB

Eric Boldt

  
JACK KEITH  
SUPERVISORY PATENT EXAMINER